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Full Length Research Paper

Using Classroom Community to Achieve Gender Equity in Online and Face-to-Face Graduate Classes

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The purpose of this study was to determine the degree to which graduate students' perceptions of classroom community in their online and face-to-face classes differed based on gender. Students participating in the study were generally from urban, suburban, and rural school districts in Southwest Texas. All students (144) who were pursuing a master's degree in educational leadership using either face-to-face or online format in the fall semester, 2008 were emailed a survey. Of the 126 surveys returned (88%), 102 participants were selected for this study based on completion of data. Perceptions were measured using the Classroom Community Scale (CCS), which included three measures: *Total classroom community, connectedness,* and *learning*. Classroom community in both online and face-to-face classes was evaluated by students who were enrolled during the fall semester, 2008. It was found that after implementing classroom community elements, there were no statistically significant differences in the perceived *total classroom community, connectedness,* and *learning* of male and female students attending both face-to-face and online classes. The study also found that there were no statistically significant differences in the perceived *total classroom community, connectedness,* and *learning* of male and female students attending only online classes and for those attending only face-to-face classes. Findings suggest that by providing elements of a positive classroom community, university instructors can better meet the needs of male and female graduate students, thus eliminating any potential gender inequities in both face-to-face and online classes.

Keywords: online learning, gender, gender equity, gender gap, distance learning, classroom community, connectedness, learning, web-based learning

Introduction

Enhancing online learning has been the goal of many universities today. Enhancement may come in several formats, but critical to the quality of any online program is successful completion for all students, regardless of gender, race, age, or ethnicity. Even though technological advances have been made with regard to male and female participation, studies reveal that gender differences still exist in several areas related to distance learning. In this paper, we explore how the implementation of Classroom Community can serve as an equalizer for female students who may otherwise struggle with online learning and/or the use of technology as a learning tool. Studies have examined gender differences in confidence, teacher attitude, computer experience, and perceptions of computers as a male domain (Young, 2000). In addition, Muilenburg and Berge (2005) when analyzing barriers to online learning found gender as a barrier with respect to administrative issues as well as time and support for studies. In a later study of age, gender and ethnicity in web-based instruction, Enoch and Soker (2006) found gender to be a factor in terms of access to technology for Israeli university students enrolled in web-based courses. Additionally, Wolfe (1999), in her study of gender differences in computer-mediated classroom interactions, found that "electronic communication does not automatically equalize the proportion of discourse spoken by men and women" (p. 153). In their analysis of retention problems for female students in university computer science, Bunderson and Christensen (1995) reported that females were less likely to take advantage of

computer learning opportunities than males. Similarly, Young (2000) reported gender differences in the way high school students oriented themselves to the world of computers and technology, with boys being more confident than girls in their use of technology.

One essential element of online learning is the creation of classroom community where students are both challenged in their learning and feel they are a contributing member of the group as a whole (Rovai, 2001). Researchers have found differences in how males and females perceive classroom community in both graduate and undergraduate online classes (Booker, 2008; Rovai & Baker, 2005).

Measuring male and female graduate students' perceptions of how well their courses developed a sense of classroom community is important in targeting areas for improvement. In this study, we explored potential differences in male and female perceptions of their success in both online and face-to-face classrooms. In addition, we measured the perceptions of classroom community of males and females who attended either online or face-to-face graduate educational leadership classes. These perceptions were measured using the Classroom Community Scale developed by Rovai (2002) who granted the authors permission to use the instrument in 2008. Specifically, we explored the following three research questions:

1. Is there a statistically significant difference in the perceptions of males and females regarding elements of classroom community as experienced by all students in either online or face-to-face classes?
2. Is there a statistically significant difference in the perceptions of males and females regarding elements of classroom community as experienced in online classrooms?
3. Is there a statistically significant difference in the perceptions of males and females regarding elements of classroom community as experienced in face-to-face classrooms?

Classroom Community

Developing a positive classroom community is essential in both face-to-face classes and online classes (Rovai, 2001). A positive classroom community insures that students feel connected to the professor and other students in the class in order for their educational needs to be met. In analyzing the Classroom Community Scale instrument, we found two main components of classroom community, *connectedness* and *learning. Connectedness* is composed of spirit, trust and interactions. The spirit component encompasses the feelings that students are accepted by their class members (2001), that students belong with the group and there is a group identity. Trust is developed among students, which allows students to feel safe to respond to others and share their own ideas, *indicating that* friendships are established. *Learning* includes the feeling that the class will work together to complete a goal and to construct meaning and understanding of the course content (2001).

Palloff & Pratt (1999) reported that when developing classroom community in online classes, the professor assumes the role of facilitator in developing the course, posting the syllabus, discussing goals, ethics, communication styles and clear expectations for the class. Also, the professor develops procedural rules and decision-making norms, which are essential to establishing classroom community (1999).

In both online and face-to-face classrooms, the professor should take the time to get to know the students and for them to get to know each other (Booker, 2008). Tinto (1997) noted that building supportive peer groups is important because they provide for both social and academic support. However, the development of classroom communities online can be a time-consuming and difficult process when students are disconnected from the university campus life. Also, professors who teach online have difficulty perceiving students' physical reactions with only written language for communication to monitor and adjust instruction (Palloff & Pratt, 1999). Creating a friendly social class climate in online venues at the beginning of the semester is essential for successful learning, because human needs play a large part in the way online communities are formed (Collins & Berge, 1996; Cradler, McNabb, Freeman, & Burchett, 2002; Dow, 2008; Palloff & Pratt, 1999). Muilenburg and Berge (2005) found that social interaction was strongly related to a positive classroom to the point that the lack of social interaction were perceived by most students as even being a strong barrier to their learning.Shepard (2008), Coordinator for Educational Technology for Walden University, found that helping to build online communities was important for the success of the students in their graduate and undergraduate programs. This was done when students are engaged both with other students and the faculty (2008).

DiRamio and Wolverton (2006) found that providing online connections, experiences, and setting high expectations for student work facilitated students in becoming responsible for their own work. Santovec (2004) also emphasized that online learning communities can provide for a deep understanding of the subject matter through discussions and interactions with members of the class. Students must feel an affiliation with the university in order to be successful, even when they are never physically present on the campus. Palloff and Pratt (1999) created a framework for building online communities *which* included collaborative learning in which students are engaged in creating meaning of the course content. Lally and Barrett (1999) in their study of building classroom community online found that cooperative learning was a key feature of online classes. Curtis (2004) and Caverly and MacDonald (2002) found that much of the success of online communities comes from the use of online threaded discussions. Students had the time to think through their discussion, and these cooperative group discussions helped them reach their academic goals. In

addition, cooperative groups tend to encourage and support one another so that they can all be successful.

Gender and Sense of Community

In the area of classroom community, Rovai and Baker (2005) found that female students in online graduate courses responded with higher scores than males in the areas of *connectedness* and *learning*. Also, females perceived that their learning was greater than the male students. According to Sullivan (2001), both male and female students enjoyed face-to-face interaction in traditional classrooms; however, females, more than males, felt like the lack of face-to-face interaction was a major drawback in online classrooms. However, the writer also found that it was possible to create online learning environments that both men and women would find favorable.

In the areas of learning and student outcomes, there have been some discussions concerning the effectiveness of online classrooms as compared to the face-to-face classes. Allen and Seaman (2003) found that online instruction is as good as or equal to face-to-face instruction. Russell (1999) found that the online students had the same grades and attitudes towards the course as the face-to-face students taking the same classes. In addition, students in online classes participated in the same high levels of thinking as their face-to-face students (Christopher, Tallent-Runnels & Thomas, 2004). However, additional studies found that students preferred face-to-face contact over online instruction (Bikowski, 2007; Ritter, Polnick, Fink, & Oescher, 2009).

Methodology

The Classroom Community Scale (CCS) developed by Rovai (2002) was used to measure participants' sense of *community*, *connectedness*, and *learning*. The survey was administered using an email format during the fall semester of 2008. Students from 12 Educational Leadership classes responded to the survey. One hundred twenty six of the one hundred forty-four students completed the questionnaire for a response rate of 88%. A single student responded to less than 70% of the items on all scales, and three participants did not identify the delivery type of the course and five did not record a gender. These participants were eliminated from the analyses leaving a usable total of 117. Because the 15 students taking hybrid classes in the survey had no male students, they will not be further considered in this study, which resulted in a sample of 102 students.

Of the 102 participants responding to more than 70% of the items and reporting gender, slightly less than three fourths of the participants were female (71, 69.6%) and slightly more than one fourth were male (31, 30.4%). Of these respondents, 70 (59.8%) were enrolled in an online class and 32 (27.4%) in face-to-face classes.

The CCS instrument consisted of 20 items to which participants responded on a five point Likert scale ranging from strongly disagree to strongly agree Rovai (2002). Three sets of scores are calculated. The first is a total *community* score calculated as the mean of all non-missing items. The second and third were subscales of 10 items each which represented *connectedness* and *learning* scores. Again the scores for these were calculated as the mean on non-missing items. No score was calculated for any subject for which less than 70% of the items on the total scale or subscales was missing. Scores for the total *community* scale and both subscales of *connectedness* and *learning* were therefore in the same scoring range on the response scales Rovai (2002).

Ten of the 20 items in the CCS are negatively worded. A participant's response to the negatively worded statement required the response to be reversed. That is, a strongly disagree response to a negative item suggested the subject strongly agreed, and the answer of 0 is recoded to a 4. The following algorithm was used to make all changes (5- ITEM) = SCORE. Scores are interpreted as described in Table 1. The scores for the total score should be interpreted relative to *community*. Scores for the first and second subscale are interpreted relative to *connectedness* and *learning* respectively.

A principal components confirmatory factor analysis with varimax rotation was used to examine the underlying constructs of *community*, *connectedness*, and *learning*. In the case of all but one item, factor loadings were consistent with those stated by Rovai (2001). Cronbach's alpha was used to estimate the reliability of the total score and both subscale scores. These estimates for the *community* scale, *connectedness* subscale, and *learning* subscale were .91, .91, and .86 respectively. All were acceptable levels of reliability for the purpose of this study. The summation of all twenty items yielded a measure of a sense of *community*. The even numbered questions, when summed, provide a score to reveal the sense of *learning* in the class. The odd numbered questions, when summed, provide a score to reveal the sense of *connectedness* in the class.

Findings Related to Gender

The means and standard deviations of the total group (online and face-to-face) by gender for each of the three measures of the survey instrument are shown in Table 2. Examining the mean scores from Table 2 and using the matrix from Table 1 shows that the mean scores of *community, connectedness, and learning* for the total sample as well as both males and females in both the online classes and face-to-face classes were in the somewhat positive range. The mean *community* scores for both males and females showed that both perceived that the *learning* and *connectedness* components of the classroom community were strong enough to support their success in the classroom. This trend was also evident in the *connectedness* subcomponent where the mean scores for males and females indicated both groups experienced a feeling of acceptance and belonging throughout the course. The highest mean scores were in the

area of *Learning.* Here the scores for both males and females indicated that students felt that their goals were accomplished, in part, because of the support from their other class members.

To test the significance of the differences of the means for students taking both online and face-to-face classes, a *t*-test was run. The results showed no statistically significant differences in the perceptions of males and females regarding elements of classroom community as experienced by all students in either online or face-to-face classes. All assumptions underlying the *t*-test were met, and the results can be seen in Table 3. The effect sizes for all three scales are small (Huck, 2008).

Table 4 shows the data by gender for those students enrolled in online classes. Based upon the matrix from Table 1, the mean scores for both males and females in the area of *community* and *learning* are in the somewhat positive range. The *learning* mean scores for males and females were, however, somewhat higher than the other subscales. The scores for *connectedness* were in the high portion of the neutral range.

To test the significance of the differences of the means for students taking online *t*-test was run. The test showed that there were no statistically significant differences in the perceptions of males and females regarding elements of *community*, *connectedness* and *learning* as experienced by students in the online classes. All assumptions underlying the t-test were met, and the results can be seen in Table 5. The effect sizes for all three scales are small (Huck, 2008).

The data for the face-to-face courses by gender is seen in Table 6. Based on the matrix from Table 1 the mean scores for both the male and female students enrolled in the face-to-faces classes showed them to be on the high end of the somewhat positive category in all three areas, *community*, *connectedness* and *learning*.

While the mean scores of males were higher than females in the areas of *community*, *connectedness* and *learning* for students taking face-to-face classes, a *t*-test of the differences of the means found that that there were no statistically significant differences in the means of the perceptions of males and females regarding elements of classroom community as experienced in face-to-face classes All assumptions underlying the *t*-test were met, and the results can be seen in Table 7. The effect sizes for all three scales are small to moderate. (Huck, 2008).

Conclusions and Recommendations for Further Study

In this study, we found no significant differences between the perceptions of male and female graduate students regarding their experiences of classroom community in either online or face-to-face classes. These findings are significant to our study, in that they demonstrate that by establishing a positive classroom community in either class type, both males and females have equal access to learning opportunities, regardless of the delivery method. By purposefully including elements of classroom community (encouraging participation, family and caring relationships, connecting students to each other and to the university, collaborate learning activities, etc.), equitable environments were created. This is supported by Tinto's (1997) recommendation to build support of peer groups for both academic and social support to ensure success for all students. In addition, Ni and Aust (2008) examined gender differences in online graduate and undergraduate classes and found that regardless of their gender, the development of a sense of classroom community is essential to enhance student perceived learning and course satisfaction. Specifically, our study demonstrated that there were no gender differences regarding elements of classroom community as perceived by all students (Research Question One). In addition, there were no gender differences in the way each group, males and females, perceived elements of classroom community in either their online or face-to-face classes (Research Questions Two and Three, respectively).

We conclude from our study that the inclusion of multiple classroom community elements may be an effective way to equalize potential gender differences in online environments, specifically. This need is further validated by other researchers who have found that without intervention, gender differences in online classrooms do exist in social interactions (Wolfe, 1999), technology usage levels (Enoch & Soker, 2006), communication levels (Sullivan, 2001), time usage (Muilenburg & Berg, 2005), as well as attitudes towards technology (Young, 2000). The results of our study were found to differ from earlier studies conducted by Rovai (the author of the Classroom Community Scale used in our study) and Baker (2005). Several factors may account for the lack of difference in both male and female students' perceptions when compared to the earlier study conducted by Rovai and Baker (2005): (a) The difference in 3 years between the two studies may reflect an increase in how females positively respond to computers and computer usage; (b) the intensive efforts made by online faculty to develop a high level of classroom community at the university in our study may have balanced the responses of males and females, and (c) the trend toward younger students now attending graduate education programs (average age 34 years in our study) may represent different perspectives with respect to *classroom community* and *learning* in online classrooms than females in earlier studies. In our online and hybrid courses, efforts have been made to implement strategies that eliminate gender inequity in *learning.*

In summary, we found from our study, that by building and sustaining a sense of classroom community, course designers and instructors can eliminate potential inequities in the way males and females may perceive their levels of *learning* and *connectedness* in both online and face-to-face classes. While improving the area of *connectedness* can enhance learning for all students, female students who traditionally learn better in environments where people are accepted and feel they belong

in the classroom, may especially benefit from the increased inclusion of classroom community elements. We recommend that researchers further assess how the elements of classroom community are utilized in their online classes as a tool for meeting the needs of all adult learners. In addition, research in how the concept of classroom community can be used to impact learning with correlations to actual academic performance. As online classrooms in graduate school continue to grow, it is important that researchers consider what elements have the greatest impact on both students' perceptions of their own learning, including engagement with others and with the faculty.

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Table 1

Interpretation of CCS Scores

Scoring Range	Interpretation
0.00 – 0.49	Strongly negative sense of community, connectedness, or learning
0.50 – 1.49	Somewhat negative sense of community, connectedness, or learning
1.50 – 2.49	Neutral sense of community, connectedness, or learning
2.50 – 3.49	Somewhat positive sense of community, connectedness, or learning
3.50 – 4.00	Strongly positive sense of community, connectedness, or learning

Table 2

Means of Total Scores by Gender for All Students

Instrument	Gender	*N*	*M*	*SD*
Community	Male	31	2.61	.64
	Female	71	2.58	.74
	Total	102	2.59	.70
Connectedness	Male	31	2.94	.56
	Female	71	2.82	.81
	Total	102	2.85	.74
Learning	Male	31	2.72	.64
	Female	71	2.77	.55
	Total	102	2.70	.68

Table 3

t-Test for Equality of Means for All Students

	t	*p*	*d*
Community	0.150	0.881	0.16
Connectedness	0.248	0.805	0.03
Learning	0.281	0.780	0.11

Table 4

Online Results by Gender

Gender		Community	Connectedness	Learning
Male	*N*	24	24	24
	M	2.66	2.46	2.86
	SD	0.55	0.63	0.59
Female	*N*	46	46	46
	M	2.53	2.34	2.72
	SD	0.70	0.69	0.89

Table 5

t-Test – Equality of Means of Online Results by Gender

Subscale	*t*	*p*-value	*d*
Community	0.799	0.328	0.17
Connectedness	0.667	0.507	0.17
Learning	0.656	0.514	0.19

Table 6

Face-To-Face Results by Gender

Gender		Community	Connectedness	Learning
Male	N	7	7	7
	M	3.17	3.12	3.22
	SD	0.32	0.34	0.31
Female	N	25	25	25
	M	3.01	3.03	2.99
	SD	0.54	0.60	0.62

Table 7

t-Test-Equality of Means of Face-to-Face Results by Gender

Subscale	*t*	*p*-value	*d*
Community	1.02	0.32	0.38
Connectedness	0.541	0.595	0.41
Learning	0.969	0.186	0.31